

Amendments to the Specification:

On page 6, please replace paragraph [0015] with the following amended paragraph:

[0015] The basic SPOC™ technology, as described in ~~co-pending~~, co-owned U.S. Patent Application Nos. 09/625,710 ~~(abandoned)~~, 10/024,679 (~~US-2002/0134706~~ U.S. Patent No. 6,946,111) and 10/024,167 (~~US-2002/0131928~~ U.S. Patent No. 6,800,269), which are hereby incorporated herein by reference, provides an alternative to the conventional Claus process to handle H₂S-containing fluid streams. U.S. Patent ~~Application Publication Nos. 2002/0134706~~ Nos. 6,946,111 and ~~2002/0131928~~ 6,800,269 (Keller et al.) ~~describes~~ describe a method of selectively converting even high concentrations of hydrogen sulfide in H₂S-containing gas streams to elemental sulfur via a short contact time catalytic partial oxidation process (SPOC™) that is more economic and efficient than a Claus type process. The process is carried out in a more compact system than a conventional Claus plant. Conversion of H₂S to elemental sulfur by the SPOC™ process may be accompanied by the formation of some SO₂ as a result of gas-phase reactions between S⁰ and O₂ that occur both downstream from the catalyst zone and within the catalyst zone. This secondary production of SO₂ is typically observed when higher than stoichiometric O₂/H₂S ratios are used to increase the H₂S conversion. An apparatus and process that further improve the conversion of H₂S to elemental sulfur would be valuable in the art, particularly for meeting stringent Federal environmental standards and the demands for cleaner industrial waste gas emissions as required by the Environmental Protection Agency.

On page 23, please replace paragraph [0064] with the following amended paragraph:

[0064] The Pt-Rh/Mg and Pt-Rh/Ln catalysts also have superior activity for converting an H₂S stream containing a light hydrocarbon, such as methane, to elemental sulfur and synthesis gas, by way of concurrent CPOX and SPOC™ reactions carried out over the same catalyst in a single reaction zone, operating the reactor at hydrocarbon, H₂S and O₂ concentrations and process conditions that favor the formation of both sulfur, CO and H₂, as described in co-owned U.S. Patent No. 6,579,510, ~~and U.S. Patent Application No. 09/625,710 filed July 25, 2000,~~ each of which is hereby incorporated herein by reference.

On page 24, please replace paragraph [0066] with the following amended paragraph:

[0066] The carbiding process includes exposing the catalyst, in any of the forms described above, to light hydrocarbon (a C₁-C₅ hydrocarbon, preferably methane, ethane, propane or butane) under CPOX reaction conditions as described in co-owned ~~U.S. Patent Application No. 09/625,710 filed July 25, 2000~~ or U.S. Patent Application No. 10/317,936 filed December 12, 2002 (U.S. Patent Application Publication No. 2003/0129123). Preferably this hydrocarbon pre-treatment procedure (referred to herein as "carbiding") is carried out with the catalyst in place in the short contact time reactor. The carbiding treatment includes heating the catalyst to at least 700°C or up to about 1,500°C, preferably in the range of 850°C - 1,300°C, in the presence of the light hydrocarbon. Upon getting the catalyst up to CPOX operating temperature, the flow of hydrocarbon is stopped and the flow of H₂S containing gas is begun for sulfur removal and recovery under SPOC-III™ operating conditions. It is preferable to perform the carbiding treatment before exposing the catalyst to H₂S or other sulfur compound while the catalyst is at a temperature at which it can chemically react with sulfur or at which sulfur can condense on its active sites. In the carbiding treatment, it is preferable to mix the hydrocarbon with a small amount of oxygen or O₂-containing gas to deter or minimize coking of the catalyst during treatment. The amount of oxygen preferably does not exceed the stoichiometric amount necessary to support catalytic partial oxidation of the hydrocarbon (CPOX reaction), *i.e.*, a carbon:oxygen molar ratio of 2:1. If the catalytic components are also active for catalyzing the CPOX reaction, production of synthesis gas (CO and H₂) may commence during the pre-treatment step upon reaching a temperature sufficient to initiate the reaction. Without wishing to be bound by any particular theory, it is believed that, in the case of a Pt-Rh alloy catalyst, the formation of Rh and/or Pt carbide in which at least a substantial portion of the catalytic metal component exists in the same phase with carbon (e.g., RhC_x or PtC_x), which resists the formation of metal sulfide(s) that can deactivate the catalyst by covering the active centers. Thus, the stability and life of the catalyst on H₂S stream is increased or enhanced by the carbiding treatment.

On page 26, please replace paragraph [0071] with the following amended paragraph:

[0071] The catalyst compositions employed in these tests are set out in the Examples which follow. The catalytic activity of representative catalyst compositions described above has been previously established using a similar test procedure, as disclosed in a related U.S. Patent ~~Application No. 10/024167~~ 6,800,269, which is hereby incorporated herein by reference.